

(11)Publication number : 2000-251456

(43)Date of publication of application : 14.09.2000

(51)Int.Cl.

G11B 31/00

H04N 5/00

(21)Application number : 11-054681

(71)Applicant : YAMAHA LIVINGTEC CORP

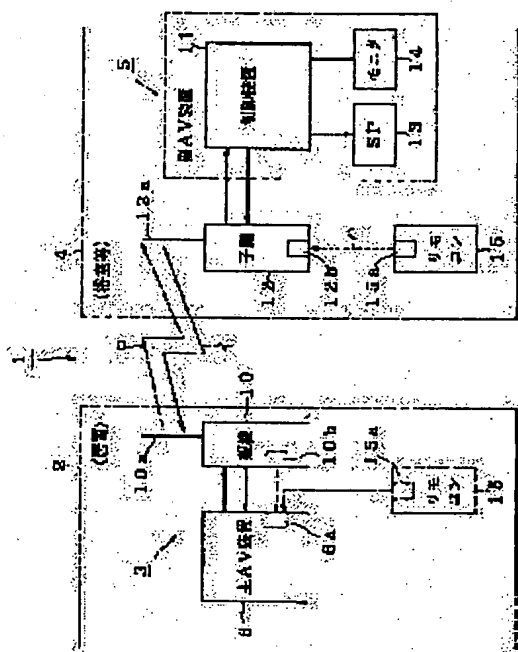
(22)Date of filing : 02.03.1999

(72)Inventor : TERANAKA YOSHIHIKO

(54) AV EQUIPMENT CONTROLLER**(57)Abstract:**

PROBLEM TO BE SOLVED: To provide an AV equipment controller capable of audibly viewing video and sound while controlling a main AV equipment installed at a certain position by a subsidiary AV equipment installed to be apart therefrom by bi-directionally controlling the main AV equipment and the subsidiary AV equipment.

SOLUTION: This AV equipment controller 1 controls a main AV equipment 3 and a subsidiary AV equipment 5 which are installed at different locations. Transmitting and receiving functions are given to the equipments 3 and 5, so that the equipments 3 and 5 are bi-directionally controlled. AV signals are transmitted with radio signals from the equipment 3 to the equipment 5 through the controller 1. At least equipment 5 of the equipments 3 and 5 has an infrared(IR) ray receiving section receiving IR signals transmitted from an IR controller. At least main AV equipment controller of the main AV equipment controller and a subsidiary AV equipment controller has an IR transmitting section. The main AV equipment controller converts control radio signals transmitted from the subsidiary AV equipment controller into IR ray signals to control the equipment 3.

**LEGAL STATUS**

[Date of request for examination] 14.05.1999

[Date of sending the examiner's decision of rejection] 04.06.2002

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's
decision of rejection]

[Date of extinction of right]

* NOTICES *

JPO and INPIT are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original
precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] The AV equipment control unit characterized by constituting so that it may be the AV equipment control unit which controls the main AV equipment installed in the respectively separate location, and a subAV equipment, a transmitting function and a reception function may be given to said main AV equipment and subAV equipment, respectively and the main AV equipment and a subAV equipment can be controlled bidirectionally.

[Claim 2] While AV signal is transmitted to a subAV equipment by the radio signal through each AV equipment control unit from said main AV equipment It has the infrared receive section where a subAV equipment is sent from an infrared controller at least among the main AV equipment and a subAV equipment. Even if there are few main AV equipment control units and subAV equipment control units, the main AV equipment control unit has the infrared transmitting section. The main AV equipment control unit is an AV equipment control unit according to claim 1 characterized by changing into an infrared signal the radio signal for control transmitted from the subAV equipment control unit, and controlling the main AV equipment.

[Claim 3] It is the AV equipment control unit according to claim 1 characterized by for the main AV equipment changing into an infrared signal the electrical signal transmitted from the subAV equipment by the main AV equipment control unit while said subAV equipment receives the infrared radiation sent from an infrared controller by the subAV equipment control unit, changes it into an electrical signal and transmitting to the main AV equipment, and controlling the main AV equipment.

[Claim 4] It is the AV equipment control device according to claim 1 characterized by forming an actuation switch in the subAV equipment control device of said subAV equipment, transmitting the actuation signal by this actuation switch to the main AV equipment control device of said main AV equipment with a cable, and for the main AV equipment control device changing into an infrared signal the signal for control transmitted from the subAV equipment control device, and controlling the main AV equipment.

[Claim 5] The AV equipment control unit according to claim 2 or 3 characterized by giving the learning function of the remote control for the main AV equipments to the infrared controller or the main AV equipment control unit for said subAV equipments.

[Claim 6] The AV equipment control unit according to claim 1 to 5 characterized by installing said main AV equipment in one locations, such as sitting room and a dressing room, and installing a subAV equipment in one or more locations, such as a bathroom and a bedroom.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the AV equipment control unit which can control mutually the AV equipment currently installed in sitting room etc., and the AV equipment installed in the bath interior of a room etc.

[0002]

[Description of the Prior Art] Although the equipment which controls an AV equipment by the former, for example, several m, of general domestic **** distance is known, this control unit consists of AV equipments (it is called the main AV equipment) installed in sitting room, such as a CD player and VTR, so that AV signal may be transmitted to a loudspeaker, headphone, etc. installed in the location left several m with FM wireless or infrared radiation (it is called a subAV equipment). And music and voice can enjoy themselves, without installing the main AV equipments, such as a CD player, in the location where it is separated from the main AV equipment, and voice cannot be easily heard due to this control unit separately.

[0003]

[Problem(s) to be Solved by the Invention] However, if it is in this control unit, since it is the structure which controls the subAV equipment as a receiving side by the main AV equipment as a transmitting side, It is difficult to operate sound volume, adjustment, a change of video to which cannot control the main AV equipment currently installed in sitting room from the subAV equipment currently installed in the viewing-and-listening location, but it views and listens in a viewing-and-listening location with a subAV equipment. After all, there was a trouble that the AV equipment of dedication had to be separately installed also in a viewing-and-listening location.

[0004] Moreover, since only the optical distance was able to be transmitted when infrared radiation is used as an AV signal, but it was easy to receive active jamming in being FM wireless, there was also a trouble that it was difficult to view and listen to the image stabilized in another room or the location distant for a while or music.

[0005] This invention was made in view of such a situation, and it is by carrying out congruence directional control of the main AV equipment and the subAV equipment to offer the AV equipment control unit which can view and listen to an image or voice, controlling the purpose of invention according to claim 1 by one or more subAV equipments of a location which left the main AV equipment installed in a piece place. Moreover, the purpose of invention claim 2 thru/or given in five is to offer the AV equipment control unit which can perform easily control of the main AV equipment and a subAV equipment in addition to the purpose of invention according to claim 1, and the purpose of invention according to claim 6 is to offer the AV equipment control unit which is stabilized, and can view and listen to an image or music in two or more domestic locations in addition to the purpose of invention claim 1 thru/or given in five.

[0006]

[Means for Solving the Problem] That this purpose should be attained, among this inventions, invention according to claim 1 is an AV equipment control unit which controls the main AV equipment installed in the respectively separate location, and a subAV equipment, gives a transmitting function and a reception function to the main AV equipment and a subAV equipment, respectively, and is characterized by constituting so that the main AV equipment and a subAV equipment can be controlled bidirectionally.

[0007] Thus, since the main AV equipments, such as a CD player installed in the separate location by constituting, VTR, a BS-CS tuner, and a cable tuner, and subAV equipments, such as amplifier, a loudspeaker, and a LCD monitor, have a transmitting function and a reception function, respectively, the bidirectional transmission of them is attained and the location in which the main AV equipment is installed can control the main AV equipment from the subAV equipment installed in the distant location (control). Therefore, it can view and listen to an image or voice (music), controlling the main AV equipment installed in one place by the subAV equipment installed in other piece places or two or more places.

[0008] Moreover, while AV signal is transmitted to a subAV equipment by the radio signal through each AV equipment control unit from the main AV equipment, invention according to claim 2 It has the infrared receive section where a subAV equipment is sent from an infrared controller at least among the main AV equipment and a subAV equipment. It is characterized by changing into an infrared signal the radio signal for control of the main AV equipment control unit and a subAV equipment control unit to which the main AV equipment control unit has the infrared transmitting section, and the main AV equipment control unit was transmitted from the subAV equipment control unit, and controlling the main AV equipment at least.

[0009] Moreover, invention according to claim 3 is characterized by for the main AV equipment changing into an infrared signal the electrical signal transmitted from the subAV equipment, and controlling the main AV equipment with the main AV equipment control unit, while a subAV equipment receives the infrared radiation sent from an infrared controller, changes into an electrical signal and transmits to the main AV equipment with the subAV equipment control unit. Moreover, it is characterized by for invention according to claim 4 forming an actuation switch in the subAV equipment control device of a subAV equipment, transmitting the actuation signal by this actuation switch to the main AV equipment control device of the main AV equipment with a cable, and for the main AV equipment control device changing into an infrared signal the signal for control transmitted from the subAV equipment control device, and controlling the main AV equipment. Moreover, invention according to claim 5 is characterized by giving the learning function of the remote control for the main AV equipments to the infrared controller or the main AV equipment control unit for subAV equipments.

[0010] Thus, by constituting, the infrared radiation sent for example, from an infrared controller is received in the infrared receive section of a subAV equipment, this is changed into a radio signal predetermined with a subAV equipment control unit, it transmits to the main AV equipment control unit, or the actuation signal by the actuation switch of a subAV equipment control unit is transmitted to the main AV equipment control unit with a cable. And the control signal transmitted from the subAV equipment control unit is changed into an infrared signal with the main AV equipment control unit, and the main AV equipment is controlled. If a learning function is given to the infrared controller at this time, for example, a subAV equipment, etc., the main AV equipment will be controlled according to liking. Actuation of an infrared controller, the main AV equipment by the actuation switch, and a subAV equipment is attained by this, and the control can carry out more easily.

[0011] Moreover, invention according to claim 6 is characterized by installing the main AV equipment in one locations, such as sitting room and a dressing room, and installing a subAV equipment in one or more locations, such as a bathroom and a bedroom. Thus, it is the subAV equipment which was installed in one or more locations, such as a bathroom and a bedroom, by constituting and which has amplifier, a loudspeaker, a LCD monitor, etc., stable viewing and listening of an image or the voice can be carried out, controlling the main AV equipment installed in the dressing room which carries out proximal to sitting room or a bathroom, for example, comfortable bathing is attained when an installation is a bathroom.

[0012]

[Embodiment of the Invention] Hereafter, an example of the gestalt of operation of this invention is explained to a detail based on a drawing. Drawing 1 and drawing 2 are state diagrams in which one example of the AV equipment control unit concerning this invention is shown, drawing 1 shows the outline block diagram, and drawing 2 shows an example of the installation condition.

[0013] In drawing 1 and drawing 2, the AV equipment control unit 1 consists of main AV

equipment 3 fundamentally installed in sitting room 2, and subAV equipment 5 installed in the bathroom 4. Main AV equipment 3 has the main phone 10 as television 7, CD player 8, VTR9, the broadcasting satellite tuner/decoder 16, the CS tuner / decoder 17, the main AV equipment 6 of wire broadcasting adapter 18 grade (refer to drawing 2), and a main AV equipment control unit that is connected to this main AV equipment 6 with a cable, and has antenna 10a which can be transmitted and received. While infrared dispatch section 10b is prepared in this main phone 10, infrared receive section 6a is prepared in main AV equipment 6, and it is constituted so that the infrared signal sent from infrared dispatch section 10b of a main phone 10 may be received by infrared receive section 6a of main AV equipment 6.

[0014] On the other hand, said subAV equipment 5 has the monitor 14 grade attached in wall-panel 4b of the loudspeaker 13 of the pair which was connected to the control unit 11 and attached in head-lining 4a of a bathroom 4, and a bathroom 4, as it is indicated in drawing 2 as the control unit 11 which consists of monitor driving gears, such as amplifier, a LCD monitor, and CRT, etc., and the cordless handset 12 as a subAV equipment control unit which is connected to this control unit 11 with a cable, and has antenna 12a which can be transmitted and received. As for the loudspeaker 13 and monitor 14 which are arranged in this bathroom 4, the thing of for example, waterproofing structure is used.

[0015] Moreover, infrared receive section 12b is prepared in the cordless handset 12 of subAV equipment 5, and this infrared receive section 12b is arranged in the condition of wall-panel 4b of a bathroom 4 of exposing to a part suitably. And corresponding to infrared receive section 12b of this cordless handset 12, the remote control 15 of an infrared method is arranged free possible [attachment and detachment] at wall-panel 4c (refer to drawing 2) of a bathroom 4.

[0016] commercial presetting remote control and remote control with a learning function are used, and the infrared signal sent like arrow-head Ha from that infrared dispatch section 15a receives this remote control 15 by infrared receive section 12b of a cordless handset 12 -- having -- this -- it is changed into a radio signal within a cordless handset 12, and is transmitted to antenna 10a of a main phone 10 from antenna 12a. In addition, remote control of waterproof dedication is used from remote control 15 being used in a bathroom 4, for example.

[0017] Moreover, of course, it is also possible to use attached remote control for main AV equipment 3 as remote control 15, it can constitute so that it may obtain and the remote control 15 used with subAV equipment 5 can also be used in the sitting room 2 in which an infrared signal is made to send to infrared receive section 6a of main AV equipment 6 and in which main AV equipment 3 was installed, as the two-dot chain line of drawing 1 shows.

[0018] Furthermore, a learning function can be given to remote control 15, for example, and the control signal with remote control (not shown) of main AV equipment 3 dedication can be made to be able to learn beforehand, and it can also constitute so that the main AV equipment may be controlled by the control signal with the remote control 15 of subAV equipment 5 in a bathroom 4 according to a learning function. Thus, if constituted, the general-purpose article other than a supply can be chiefly used as remote control of main AV equipment 3, and favorite AV equipment with a function cheap as a result and variegated will become usable, and the deployment to existing AV equipment can be aimed at.

[0019] the main phone 10 of said main AV equipment 3, and the cordless handset 12 of subAV equipment 5 -- the frequency component of a predetermined signal -- a broadband -- being spread -- for example, several -- it is constituted so that the wireless (AV signal) of the spectrum spread system transmitted with the transmission speed of Mbps can be bidirectionally transmitted and received between both antenna 10a and 12a like drawing 1 and arrow-head I of drawing 2 , and RO.

[0020] Next, actuation of the above-mentioned AV equipment control unit 1 is explained. First, when viewing and listening to television broadcasting in a bathroom 4, it is the remote control 15 arranged at wall-panel 4c of a bathroom 4, and the power-source ON signal (infrared signal) of television 7 is transmitted like arrow-head Ha towards infrared receive section 12b of the cordless handset 12 arranged at wall-panel 4b. At this time, a power-source ON signal is changed into a radio signal with a cordless handset 12, is like arrow-head I from that antenna 12a, and is transmitted to the main phone 10 of between 2.

[0021] If the power-source ON signal of wireless is received by the main phone 10, it will be transmitted to the television 7 by which this radio signal is changed into a predetermined electrical signal, and is connected to the main phone 10 with the cable, the power source of television 7 will turn on, and television broadcasting will be televised on television 7. moreover, the image and sound signal of this television broadcasting are changed into a radio signal with a main phone 10, it is transmitted to a cordless handset 12 like arrow-head RO, and the image of television broadcasting copies out on a monitor 14 through a control device 11 -- the voice of television broadcasting is both reproduced from a loudspeaker 13. Thereby, television broadcasting can be enjoyed in a bathroom 4.

[0022] In addition, also when adjusting a television channel, an image, and voice at the time of viewing and listening of this television broadcasting, actuation of remote control 15 can perform, and AV signal is certainly transmitted between both the opportunities 12 and 10 by being transmitted by the wireless of spectrum spread system, as AV signal mentioned above between the cordless handset 12 and the main phone 10 at this time. Moreover, when predetermined time progress is carried out by preparing a timer, a transfer device, etc. which are not illustrated, for example to a television 7 side or a television change signal is inputted from remote control 15, only the image and voice which have been copied out on television 7 are made to turn off, and you may make it attain laborsaving of power.

[0023] Although the above explained the case where television broadcasting was enjoyed in a bathroom 4, when enjoying BS broadcast, CS broadcasting, or video, it can completely be operated similarly. Moreover, the power source of CD player 8, various receivers, etc. can be made to be able to turn on with remote control 15, and it can be enjoyed by choosing predetermined music and a predetermined office, and in enjoying a radio broadcasting with the radio set which enjoys the case where music is enjoyed with CD player 8, and wire broadcasting and which is not case [a radio set etc.] or illustrated, while viewing and listening to CD player 9 grade in this case in the bathroom 4, operating state will be maintained in sitting room 2.

[0024] Thus, if it is in the AV equipment control unit 1 of the above-mentioned example Since transmission and reception of AV signal are constituted for subAV equipment 5 installed in a bathroom 4, and main AV equipment 3 installed in sitting room 2 by the cordless handset 12 and the main phone 10 possible, While being able to copy out the image of television broadcasting or VTR9 on the monitor 14 of wall-panel 4b of a bathroom 4 Television broadcasting, video or music, a radio broadcasting, etc. can be enjoyed being able to reproduce the voice of television broadcasting or video, or the voice of CD player 9, and taking a bath from the loudspeaker 13 of head-lining 4a of a bathroom 4.

[0025] While being able to enjoy these and attaining comfortable bathing also in a bathroom 4 only by installing one set of main AV equipment 3 in sitting room 2, it becomes unnecessary consequently, to purchase separately television 7, a radio set, etc. of bathroom 4 dedication. Big effectiveness can be expected when viewing and listening especially with subAV equipment 5 which installed AV signals, such as various NAYUNA by which two or more installation cannot be carried out easily, a decoder, and an adapter, in general domestic at a domestic piece place or two or more places.

[0026] Moreover, even if it is the case where it is in the location which main AV equipment 3 and subAV equipment 5 left comparatively while being able to transmit AV signal correctly since the signal transmission of main AV equipment 3 and subAV equipment 5 is carried out by the wireless of the long spectrum spread system of a transmission distance, active jamming of other various signals cannot be received and AV signal can be transmitted certainly. Consequently, also in the bathroom 4 as circumference space of water, it is in the condition stabilized in television broadcasting or music, and it can be enjoyed according to liking.

[0027] Furthermore, since infrared receive section 12b is prepared in the cordless handset 12 of subAV equipment 5, while use of the remote control 15 which sends infrared radiation in a bathroom 4 can be attained, being able to set easily the image copied out on a monitor 14, the sound volume of a loudspeaker 13, etc. as the optimal condition and being able to raise the operability of subAV equipment 5, main AV equipment 3 is controllable good through subAV equipment 5. Moreover, since this remote control 15 can be used also as remote control of main

AV equipment 3, it becomes possible to obtain the AV equipment control unit 1 which was excellent in user-friendliness.

[0028] Drawing 3 is the outline block diagram showing other examples of the AV equipment control unit concerning this invention. In addition, the same sign is given to the same part as the above-mentioned example, and the detailed explanation is omitted. The description of the AV equipment control unit 1 of this example installs main AV equipment 3 in the dressing room 19 which carries out proximal to a bathroom 4, and is in the point of having connected main AV equipment 3 of this dressing room 19, and subAV equipment 5 installed in a bathroom 4 by the cable.

[0029] That is, while connecting the main AV equipments 6, such as a radio cassette recorder currently installed in the dressing room 19, a minicomponent, and VTR, to the subAV equipment 20 of the waterproof loudspeaker 13 or monitor 14 grade installed in the bathroom 4 by Cables 21a and 21b, the cordless handset 12 of subAV equipment 5 and the main phone 10 of main AV equipment 3 are connected by cable 21c. And like the above-mentioned example, infrared receive section 12b which receives the infrared signal from remote control 15 is prepared, to a main phone 10, while preparing infrared dispatch section 10b, the electrical signal transmitted from the cordless handset 12 is changed into an infrared signal, it transmits to infrared receive section 6a of main AV equipment 6, and main AV equipment 6 is controlled at a cordless handset 12. In addition, in the case of this example, of course, it is also possible between a cordless handset 12 and a main phone 10 to transmit and receive by the radio signal like the above-mentioned example.

[0030] According to the AV equipment control unit 1 of this example, since main AV equipment 3 and subAV equipment 5 are mainly connected by Cables 21a-21c, even if it is the case where both the devices 3 and 5 are installed in the room divided with the wall etc., main AV equipment 3 can be controlled easily and more certainly with subAV equipment 5. Moreover, since main AV equipment 3 and subAV equipment 5 can be incorporated in a manufacture phase, or it can set up so that main AV equipment 3 and subAV equipment 5 can be back-installed when the unit of the bathroom 4 and dressing room 19 which are illustrated, for example is carried out, the AV equipment control unit 1 can be formed more cheaply.

[0031] In addition, although the case where installed main AV equipment 3 in sitting room 2 or a dressing room 19, and subAV equipment 5 was installed in a bathroom 4 in each above-mentioned example was explained This invention is not what is limited to this in any way, either. SubAV equipment 5 The kitchen as other circumference space of water, Or a bedroom, a study room, etc. can also be suitably installed in one or more of a location, and installation of main AV equipment 3 can also be installed not only in sitting room 2 or the dressing room 19 but in one proper location. Moreover, the configuration of main AV equipment 3 in the above-mentioned example or subAV equipment 5 is also an example, for example, other various AV equipments, such as MD player, can be used as main AV equipment 3.

[0032] Furthermore, although the case where the LCD monitor as a monitor 14 was installed in a bathroom 4 was explained in the above-mentioned example The arrangement location in the bathroom 4 of subAV equipment [in / other proper monitors can be used and / the above-mentioned example] 5 etc. is an example. For example, it can change suitably arranging a loudspeaker 13 on both sides of the wall-panel 4b upper part or a monitor 14 etc., and the transmission system of wireless can also adopt not only spectrum spread system but the proper method which cannot receive active jamming easily.

[0033]

[Effect of the Invention] Since the main AV equipments, such as a CD player installed in the separate location and VTR, and the subAV equipment which has amplifier, a loudspeaker, etc. have a transmitting function and a reception function, respectively according to invention according to claim 1 as explained in full detail above, Bidirectional transmission is attained, and with the location in which the main AV equipment is installed, from the subAV equipment installed in the distant location, the main AV equipment is controllable, and it can view [controlling the main AV equipment installed in one place by the subAV equipment] and listen to an image or voice (music).

[0034] Moreover, since according to invention claim 2 thru/or given in five the main AV equipment control unit receives the radio signal by the infrared controller transmitted from a subAV equipment, and the cable signal by the actuation switch in addition to an effect of the invention according to claim 1, this is changed into an infrared signal and the main AV equipment is controlled, actuation of the main AV equipment by an infrared controller etc. is attained, and both devices can be controlled more easily.

[0035] Moreover, according to invention according to claim 6, it is the subAV equipment which was installed in one or more locations, such as a bathroom left in sitting room, a dressing room, etc., and a bedroom, in addition to the effect of the invention claim 1 thru/or given in five. Effectiveness, like can carry out stable viewing and listening of an image or the voice, controlling the main AV equipment installed in piece places, such as sitting room and a dressing room, for example, comfortable bathing is attained when the installation of a subAV equipment is a bathroom is done so.

[Translation done.]

*** NOTICES ***

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The outline block diagram showing one example of the AV equipment control unit concerning this invention

[Drawing 2] ***** -- the state diagram showing an example of an installation condition

[Drawing 3] The outline block diagram showing other examples of the AV equipment control unit concerning this invention

[Description of Notations]

- 1 AV equipment control unit
- 2 Sitting room
- 3 Main AV equipment
- 4 Bathroom
- 5 SubAV equipment
- 6 Main AV equipment
- 6a Infrared receive section
- 7 Television
- 8 VTR
- 9 CD player
- 10 Main phone
- 10a, 12a ... Antenna
- 10b Infrared dispatch section
- 11 20 SubAV equipment
- 12 Cordless handset
- 12b Infrared receive section
- 13 Loudspeaker

- 14 Monitor
 15 Remote control
 15a Infrared dispatch section
 19 Dressing room

[Translation done.]

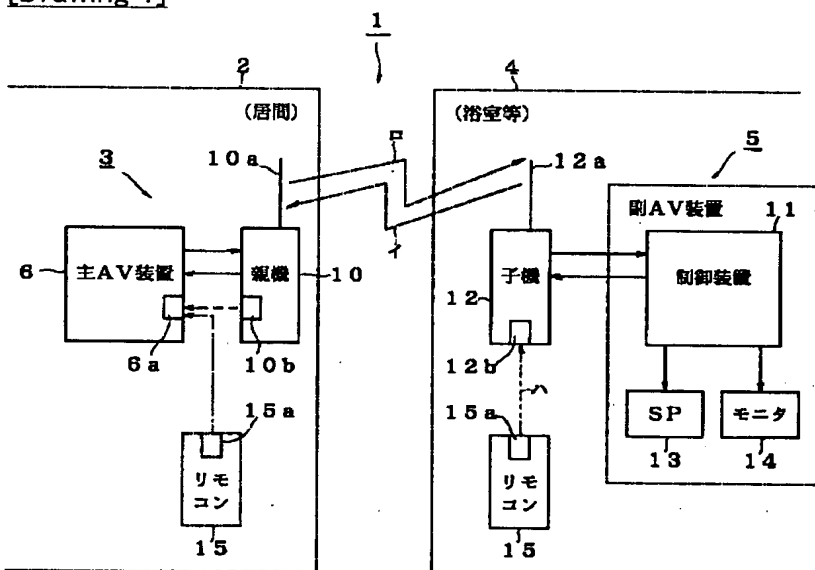
* NOTICES *

JP0 and INPIT are not responsible for any damages caused by the use of this translation.

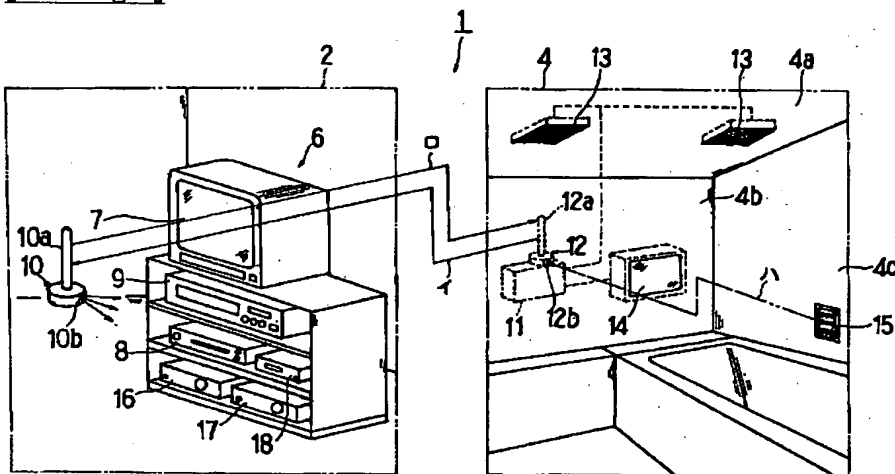
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

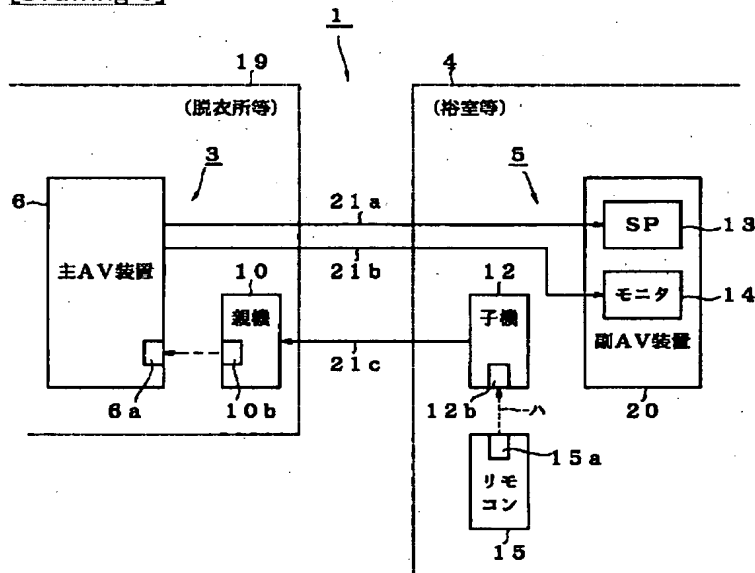
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

WRITTEN AMENDMENT

[a procedure revision]

[Filing Date] May 11, Heisei 11 (1999. 5.11)

[Procedure amendment 1]

[Document to be Amended] Specification

[Item(s) to be Amended] Claim 5

[Method of Amendment] Modification

[Proposed Amendment]

[Claim 5] The AV equipment control unit according to claim 2 or 3 characterized by constituting so that the infrared controller or the main AV equipment control unit for said subAV equipments may be operated with the remote control which has a waterproofing function and a learning function.

[Procedure amendment 2]

[Document to be Amended] Specification

[Item(s) to be Amended] 0009

[Method of Amendment] Modification

[Proposed Amendment]

[0009] Moreover, invention according to claim 3 is characterized by for the main AV equipment changing into an infrared signal the electrical signal transmitted from the subAV equipment, and controlling the main AV equipment with the main AV equipment control unit, while a subAV equipment receives the infrared radiation sent from an infrared controller, changes into an electrical signal and transmits to the main AV equipment with the subAV equipment control unit. Moreover, it is characterized by for invention according to claim 4 forming an actuation switch in the subAV equipment control device of a subAV equipment, transmitting the actuation signal by this actuation switch to the main AV equipment control device of the main AV equipment with a cable, and for the main AV equipment control device changing into an infrared signal the signal for control transmitted from the subAV equipment control device, and controlling the main AV equipment. Moreover, invention according to claim 5 is characterized by constituting so that the infrared controller or the main AV equipment control unit for subAV equipments may be operated with the remote control which has a waterproofing function and a learning function.

[Translation done.]

(19)日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11)特許出願公開番号
特開2000-251456
(P2000-251456A)

(43)公開日 平成12年9月14日(2000.9.14)

(51)Int.Cl. ⁷	識別記号	F I	テーマコード(参考)
G 1 1 B 31/00	5 1 1	G 1 1 B 31/00	5 1 1 B 5 C 0 5 6
	5 4 1		5 4 1 P
H 0 4 N 5/00		H 0 4 N 5/00	A

審査請求 有 請求項の数 6 O L (全 7 頁)

(21)出願番号 特願平11-54681

(22)出願日 平成11年3月2日(1999.3.2)

(71)出願人 392008529

ヤマハリビングテック株式会社
静岡県浜松市西山町1370番地

(72)発明者 寺中 吉彦

静岡県浜松市西山町1370番地 ヤマハリビ
ングテック株式会社内

(74)代理人 100095614

弁理士 越川 隆夫

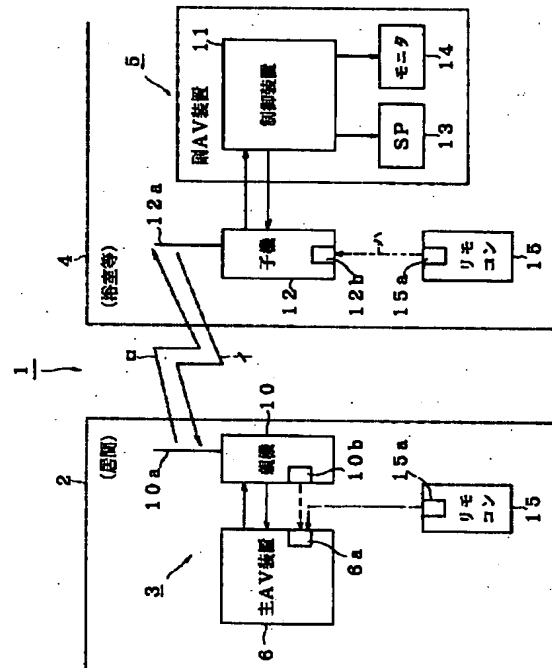
Fターム(参考) 5C056 AA05 BA01 BA08 BA10 CA06
CA13 CA19 DA06 DA11 DA20

(54)【発明の名称】 AV機器制御装置

(57)【要約】

【課題】主AV機器と副AV機器とを双方向制御することにより、一個所に設置した主AV機器を離れた位置の副AV機器で制御しつつ映像や音声を視聴し得るAV機器制御装置を提供する。

【解決手段】それぞれ別々の場所に設置された主AV機器と副AV機器とを制御するAV機器制御装置であって、主AV機器と副AV機器とに送信機能と受信機能をそれぞれ付与し、主AV機器と副AV機器とを双方向に制御しうる如く構成したことを特徴とする。前記主AV機器から副AV機器にそれぞれのAV機器制御装置を通じてAV信号が無線信号によって伝送されると共に、主AV機器と副AV機器のうち少なくとも副AV機器が赤外線コントローラから発信される赤外線受信部を有し、主AV機器制御装置と副AV機器制御装置の少なくとも主AV機器制御装置が赤外線送信部を有し、主AV機器制御装置は副AV機器制御装置から送信された制御用無線信号を赤外線信号に変換して主AV機器をコントロールする。



【特許請求の範囲】

【請求項 1】それぞれ別々の場所に設置された主 A V 機器と副 A V 機器とを制御する A V 機器制御装置であって、前記主 A V 機器と副 A V 機器とに送信機能と受信機能をそれぞれ付与し、主 A V 機器と副 A V 機器とを双方向に制御しうる如く構成したことを特徴とする A V 機器制御装置。

【請求項 2】前記主 A V 機器から副 A V 機器にそれぞれの A V 機器制御装置を通じて A V 信号が無線信号によって伝送されると共に、主 A V 機器と副 A V 機器のうち少なくとも副 A V 機器が赤外線コントローラから発信される赤外線受信部を有し、主 A V 機器制御装置と副 A V 機器制御装置の少なくとも主 A V 機器制御装置が赤外線送信部を有し、主 A V 機器制御装置は副 A V 機器制御装置から送信された制御用無線信号を赤外線信号に変換して主 A V 機器をコントロールすることを特徴とする請求項 1 記載の A V 機器制御装置。

【請求項 3】前記副 A V 機器は、その副 A V 機器制御装置によって赤外線コントローラから発信される赤外線を受信して電気信号に変換し主 A V 機器に送信すると共に、主 A V 機器は、その主 A V 機器制御装置によって副 A V 機器から送信された電気信号を赤外線信号に変換して主 A V 機器をコントロールすることを特徴とする請求項 1 記載の A V 機器制御装置。

【請求項 4】前記副 A V 機器の副 A V 機器制御装置に操作スイッチを設け、該操作スイッチによる操作信号を有線で前記主 A V 機器の主 A V 機器制御装置に送信し、主 A V 機器制御装置は副 A V 機器制御装置から送信された制御用信号を赤外線信号に変換して主 A V 機器をコントロールすることを特徴とする請求項 1 記載の A V 機器制御装置。

【請求項 5】前記副 A V 機器用の赤外線コントローラもしくは主 A V 機器制御装置に、主 A V 機器用リモコンの学習機能を持たせたことを特徴とする請求項 2 または 3 記載の A V 機器制御装置。

【請求項 6】前記主 A V 機器が居間、脱衣所等の一つの場所に設置され、副 A V 機器が浴室、寝室等の一つあるいは複数の場所に設置されることを特徴とする請求項 1 ないし 5 のいずれかに記載の A V 機器制御装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、例えば居間等に設置されている A V 機器と浴室等に設置した A V 機器とを相互にコントロールし得る A V 機器制御装置に関する。

【0002】

【従来の技術】従来、例えば一般家庭内の数メートルの近路距離で A V 機器を制御する装置が知られているが、この制御装置は、C D プレーヤや V T R 等の例えば居間に設置される A V 機器（主 A V 機器という）から、A V

信号を F M 無線もしくは赤外線で数メートル離れた場所に設置してあるスピーカやヘッドフォン等（副 A V 機器という）に伝送する如く構成されている。そして、この制御装置によって、主 A V 機器から離れていて音声聞こえ難い場所に C D プレーヤ等の主 A V 機器を別途設置することなく、音楽や音声を楽しむことができる。

【0003】

【発明が解決しようとする課題】しかしながら、この制御装置にあっては、送信側としての主 A V 機器によって受信側としての副 A V 機器を制御する構造であるため、視聴場所に設置されている副 A V 機器から居間に設置されている主 A V 機器を制御することはできず、視聴場所で視聴する音量やビデオの調整及び切り替え等を副 A V 機器で操作することが困難で、結局、視聴場所にも別途専用の A V 機器を設置せざるを得ないという問題点があった。

【0004】また、A V 信号として赤外線を使用した場合には見通し距離しか送信することができず、F M 無線の場合には妨害を受け易いため、別室や少し離れた場所で安定した映像や音楽を視聴することが難しいという問題点もあった。

【0005】本発明はこのような事情に鑑みてなされたもので、請求項 1 記載の発明の目的は、主 A V 機器と副 A V 機器とを双方向制御することにより、一個所に設置した主 A V 機器を離れた位置の一つあるいは複数の副 A V 機器で制御しつつ映像や音声を視聴し得る A V 機器制御装置を提供することにある。また、請求項 2 ないし 5 記載の発明の目的は、請求項 1 記載の発明の目的に加え、主 A V 機器や副 A V 機器の制御を容易に行い得る A V 機器制御装置を提供することであり、また、請求項 6 記載の発明の目的は、請求項 1 ないし 5 記載の発明の目的に加え、家庭内の複数の場所で映像や音楽を安定して視聴し得る A V 機器制御装置を提供することにある。

【0006】

【課題を解決するための手段】かかる目的を達成すべく、本発明のうち請求項 1 記載の発明は、それぞれ別々の場所に設置された主 A V 機器と副 A V 機器とを制御する A V 機器制御装置であって、主 A V 機器と副 A V 機器とに送信機能と受信機能をそれぞれ付与し、主 A V 機器と副 A V 機器とを双方向に制御しうる如く構成したことを特徴とする。

【0007】このように構成することにより、別々の場所に設置された C D プレーヤ、V T R、B S・C S チューナ、有線チューナ等の主 A V 機器と、アンプ、スピーカ、L C D モニタ等の副 A V 機器は、それぞれ送信機能と受信機能を有することから、双方向送信が可能となって、主 A V 機器が設置される場所とは離れた場所に設置された副 A V 機器から、主 A V 機器をコントロール（制御）することができる。そのため、1 個所に設置した主 A V 機器を、他の一個所あるいは複数個所に設置した副

AV機器によって制御しつつ映像や音声（音楽）を視聴することができる。

【0008】また、請求項2記載の発明は、主AV機器から副AV機器にそれぞれのAV機器制御装置を通じてAV信号が無線信号によって伝送されると共に、主AV機器と副AV機器のうち少なくとも副AV機器が赤外線コントローラから発信される赤外線受信部を有し、主AV機器制御装置と副AV機器制御装置の少なくとも主AV機器制御装置が赤外線送信部を有し、主AV機器制御装置は副AV機器制御装置から送信された制御用無線信号を赤外線信号に変換して主AV機器をコントロールすることを特徴とする。

【0009】また、請求項3記載の発明は、副AV機器が、その副AV機器制御装置によって赤外線コントローラから発信される赤外線を受信して電気信号に変換し主AV機器に送信すると共に、主AV機器が、その主AV機器制御装置によって副AV機器から送信された電気信号を赤外線信号に変換して主AV機器をコントロールすることを特徴とする。また、請求項4記載の発明は、副AV機器の副AV機器制御装置に操作スイッチを設け、該操作スイッチによる操作信号を有線で主AV機器の主AV機器制御装置に送信し、主AV機器制御装置は副AV機器制御装置から送信された制御用信号を赤外線信号に変換して主AV機器をコントロールすることを特徴とする。また、請求項5記載の発明は、副AV機器用の赤外線コントローラもしくは主AV機器制御装置に、主AV機器用リモコンの学習機能を持たせたことを特徴とする。

【0010】このように構成することにより、例えば赤外線コントローラから発信される赤外線を副AV機器の赤外線受信部で受信し、これを副AV機器制御装置で所定の無線信号に変換して主AV機器制御装置に送信したり、あるいは副AV機器制御装置の操作スイッチによる操作信号を有線で主AV機器制御装置に送信する。そして、副AV機器制御装置から送信された制御信号を、主AV機器制御装置で赤外線信号に変換して主AV機器をコントロールする。この時、例えば副AV機器の赤外線コントローラ等に学習機能を持たせれば、好みに応じて主AV機器が制御される。これにより、赤外線コントローラや操作スイッチによる主AV機器や副AV機器の操作が可能となって、その制御がより容易に行える。

【0011】また、請求項6記載の発明は、主AV機器が居間、脱衣所等の一つの場所に設置され、副AV機器が浴室、寝室等の一つあるいは複数の場所に設置されることを特徴とする。このように構成することにより、浴室や寝室等の一つあるいは複数の場所に設置された、アンプ、スピーカ、LCDモニタ等を有する副AV機器で、居間や浴室に隣設する脱衣所に設置された主AV機器を制御しつつ映像や音声を安定視聴できて、例えば設置場所が浴室の場合は快適な入浴が可能になる。

【0012】

【発明の実施の形態】以下、本発明の実施の形態の一例を図面に基づいて詳細に説明する。図1及び図2は、本発明に係わるAV機器制御装置の一実施例を示し、図1がその概略構成図、図2がその設置状態の一例を示す状態図である。

【0013】図1及び図2において、AV機器制御装置1は、基本的に例えば居間2に設置された主AV機器3と、浴室4に設置された副AV機器5とで構成されている。主AV機器3は、テレビ7、CDプレーヤ8、VTR9、BSチューナ/デコーダ16、CSチューナ/デコーダ17、有線放送アダプタ18等（図2参照）の主AV装置6と、この主AV装置6に有線で接続され送受信可能なアンテナ10aを有する主AV機器制御装置としての親機10を有している。この親機10には赤外線発信部10bが設けられると共に、主AV装置6には赤外線受信部6aが設けられ、親機10の赤外線発信部10bから発信される赤外線信号が主AV装置6の赤外線受信部6aで受信されるように構成されている。

【0014】一方、前記副AV機器5は、例えばアンプ、LCDモニタやCRT等のモニタ駆動装置等からなる制御装置11と、この制御装置11に有線で接続され送受信可能なアンテナ12aを有する副AV機器制御装置としての子機12と、図2に示すように、制御装置11に接続され浴室4の天井4aに取り付けられた一対のスピーカ13及び浴室4の壁パネル4bに取り付けられたモニタ14等を有している。この浴室4に配置されるスピーカ13とモニタ14は、例えば防水構造のものが使用される。

【0015】また、副AV機器5の子機12には赤外線受信部12bが設けられ、この赤外線受信部12bは、浴室4の壁パネル4bの適宜個所に露出する状態で配置されている。そして、この子機12の赤外線受信部12bに対応して赤外線方式のリモコン15が、例えば浴室4の壁パネル4c（図2参照）に着脱自在に配置されている。

【0016】このリモコン15は、例えば市販のプリセットリモコンや学習機能付きリモコンが使用され、その赤外線発信部15aから矢印ハの如く発信される赤外線信号が、子機12の赤外線受信部12bで受信されて該子機12内で無線信号に変換され、アンテナ12aから親機10のアンテナ10aに送信される。なお、リモコン15は、浴室4で使用されることから、例えば防水性の専用のリモコンが使用される。

【0017】また、リモコン15としては、主AV機器3に付属のリモコンを使用することも勿論可能であるし、副AV機器5で使用されるリモコン15を、図1の二点鎖線で示すように、主AV装置6の赤外線受信部6aに赤外線信号を発信させる得るように構成し、主AV機器3が設置された居間2で使用することもできる。

【0018】さらに、例えばリモコン15に学習機能を持たせ、主AV機器3専用のリモコン(図示せず)による制御信号を予め学習させておき、浴室4内の副AV機器5のリモコン15による制御信号によって、主AV機器を学習機能に応じて制御するように構成することもできる。このように構成すれば、主AV機器3のリモコンとして専用品の他に汎用品を使用することができ、結果として安価で多彩な機能を持つ好みのAV装置が使用可能となり、また既存のAV装置への有効利用が図れることになる。

【0019】前記主AV機器3の親機10及び副AV機器5の子機12は、所定信号の周波数成分を広帯域に拡散して例えば数Mbpsの伝送速度で伝送するスペクトル拡散方式の無線(AV信号)を、図1及び図2の矢印イ、ロの如く両アンテナ10a、12a間で双方向に送受信し得るように構成されている。

【0020】次に、上記AV機器制御装置1の動作について説明する。まず、浴室4でテレビ放送を視聴する場合は、浴室4の壁パネル4cに配置されているリモコン15で、壁パネル4bに配置されている子機12の赤外線受信部12bに向けて、矢印ハの如くテレビ7の電源オン信号(赤外線信号)を送信する。この時、電源オン信号は子機12で無線信号に変換され、そのアンテナ12aから矢印イの如く居間2の親機10に伝送される。

【0021】親機10で無線の電源オン信号が受信されると、この無線信号が所定の電気信号に変換されて親機10に有線で接続されているテレビ7に送信され、テレビ7の電源がオンして、テレビ7でテレビ放送が受像される。また、このテレビ放送の映像と音声信号が、親機10で無線信号に変換されて矢印ロの如く子機12に送信され、制御装置11を介してモニター14にテレビ放送の映像が写し出される共に、スピーカ13からテレビ放送の音声再生される。これにより、浴室4内でテレビ放送を楽しむことができる。

【0022】なお、このテレビ放送の視聴時において、テレビチャンネルや映像及び音声を調整する場合もリモコン15の操作によって行うことができ、この時、AV信号が子機12と親機10との間で前述した如くスペクトル拡散方式の無線で伝送されることにより、AV信号が両機12、10間で確実に伝送される。また、例えばテレビ7側に図示しないタイマーや切り替え装置等を設けることにより、所定時間経過したり、リモコン15からテレビ切替信号が入力された際に、テレビ7に写し出されている映像と音声のみをオフさせ、電力の省力化を図るようにしても良い。

【0023】以上は、浴室4でテレビ放送を楽しむ場合について説明したが、BS放送やCS放送、あるいはビデオを楽しむ場合も全く同様に操作することができる。また、CDプレーヤ8で音楽を楽しむ場合や有線放送を楽しむ場合、あるいは図示しないラジオ受信機等でラジ

オ放送を楽しむ場合には、リモコン15でCDプレーヤ8や各種受信機等の電源をオンさせ、所定の曲や局を選択することによって楽しむことができ、この場合、CDプレーヤ9等は浴室4で視聴している間、居間2で動作状態を維持することになる。

【0024】このように、上記実施例のAV機器制御装置1にあっては、浴室4に設置した副AV機器5と居間2に設置した主AV機器3が、子機12と親機10によってAV信号の送受信が可能に構成されているため、浴室4の壁パネル4bのモニター14にテレビ放送やVTR9の映像を写し出すことができると共に、浴室4の天井4aのスピーカ13からテレビ放送やビデオの音声あるいはCDプレーヤ9の音声を再生することができ、入浴しながらテレビ放送やビデオあるいは音楽やラジオ放送等を楽しむことができる。

【0025】その結果、居間2に1台の主AV機器3を設置するだけで、浴室4でもこれらを楽しむことができ、快適な入浴が可能になると共に、浴室4専用のテレビ7やラジオ受信機等を別途購入する必要がなくなる。特に、一般家庭内に複数設置され難い各種チューナ、デコーダ、アダプター等のAV信号を、家庭内の一個所あるいは複数個所に設置した副AV機器5で視聴する場合において大きな効果が期待できる。

【0026】また、主AV機器3と副AV機器5が伝送距離の長いスペクトル拡散方式の無線で信号伝送されるため、AV信号の伝送を正確に行うことができると共に、主AV機器3と副AV機器5が比較的離れた位置にある場合であっても、他の各種信号の妨害を受けることなくAV信号を確実に伝送することができる。その結果、水廻り空間としての浴室4内でも、テレビ放送や音楽を安定した状態でかつ好みに応じて楽しむことができる。

【0027】さらに、副AV機器5の子機12に赤外線受信部12bを設けているため、浴室4内で赤外線を発信するリモコン15の使用が可能になり、モニター14に写し出される映像やスピーカ13の音量等を最適な状態に容易に設定することができ、副AV機器5の操作性を向上させることができると共に、副AV機器5を介して主AV機器3のコントロールを良好に行うことができる。また、このリモコン15を主AV機器3のリモコンとしても使用することができるため、使い勝手の優れたAV機器制御装置1を得ることが可能になる。

【0028】図3は、本発明に係わるAV機器制御装置の他の実施例を示す概略構成図である。なお、上記実施例と同一部位には同一符号を付し、その詳細な説明は省略する。この実施例のAV機器制御装置1の特徴は、主AV機器3を浴室4に隣設する脱衣所19に設置し、この脱衣所19の主AV機器3と浴室4に設置される副AV機器5を有線によって接続した点にある。

【0029】すなわち、脱衣所19に設置されているラ

10

20

30

40

50

ジカセ、ミニコンボ、VTR等の主AV装置6を、浴室4に設置された防水性のスピーカ13やモニタ14等の副AV装置20に有線21a、21bによって接続すると共に、副AV装置5の子機12と主AV装置3の親機10とを有線21cによって接続する。そして、子機12には、上記実施例と同様に、リモコン15からの赤外線信号を受信する赤外線受信部12bを設け、親機10には、赤外線発信部10bを設けると共に子機12から送信された電気信号を赤外線信号に変換して主AV装置6の赤外線受信部6aに送信して、主AV装置6をコントロールする。なお、この実施例の場合、子機12と親機10間は、上記実施例と同様に無線信号で送受信することも勿論可能である。

【0030】この実施例のAV機器制御装置1によれば、主AV装置3と副AV装置5が主に有線21a～21cによって接続されているため、両装置3、5が壁等によって区画されている部屋に設置されている場合であっても、副AV装置5で主AV装置3を容易かつより確実にコントロールすることができる。また、例えば図示する浴室4と脱衣所19がユニットされる場合等に、主AV装置3と副AV装置5を製造段階で組み込んだり、主AV装置3や副AV装置5を後設置できるように設定することができるため、AV機器制御装置1をより安価に形成することができる。

【0031】なお、上記各実施例においては、主AV装置3を居間2や脱衣所19に設置し、副AV装置5を浴室4に設置する場合について説明したが、本発明はこれに何等限定されるものでもなく、例えば副AV装置5を他の水廻り空間としての台所、あるいは寝室や勉強部屋等の適宜場所の一つあるいは複数に設置することもできるし、主AV装置3の設置も居間2や脱衣所19に限らず、適宜の一つの場所に設置することもできる。また、上記実施例における主AV装置3や副AV装置5の構成も一例であって、例えば主AV装置3として、MDプレーヤ等の他の各種AV機器を使用することができる。

【0032】さらに、上記実施例においては、浴室4にモニタ14としてのLCDモニタを設置する場合について説明したが、他の適宜のモニタを使用することができるし、上記実施例における副AV装置5の浴室4内での配置位置等は一例であって、例えばスピーカ13を壁パネル4b上部やモニタ14の両側に配置する等、適宜に変更することができるし、無線の伝送方式もスペクトル拡散方式に限らず、妨害を受け難い適宜の方式を採用することができる。

【0033】

【発明の効果】以上詳述したように、請求項1記載の発明によれば、別々の場所に設置されたCDプレーヤやVTR等の主AV装置とアンプやスピーカ等を有する副AV装置が、それぞれ送信機能と受信機能を有するため、

双方向送信が可能となって、主AV装置が設置される場所とは離れた場所に設置された副AV装置から、主AV装置を制御することができ、1個所に設置した主AV装置を副AV装置によって制御しつつ映像や音声（音楽）を視聴することができる。

【0034】また、請求項2ないし5記載の発明によれば、請求項1記載の発明の効果に加え、例えば副AV装置から送信される、赤外線コントローラによる無線信号や操作スイッチによる有線信号を主AV装置制御装置で受信し、これを赤外線信号に変換して主AV装置をコントロールするため、赤外線コントローラ等による主AV装置の操作が可能となって、両装置の制御をより容易に行うことができる。

【0035】また、請求項6記載の発明によれば、請求項1ないし5記載の発明の効果に加え、居間や脱衣所等とは離れた浴室や寝室等の一つあるいは複数の場所に設置された副AV装置で、居間や脱衣所等の一個所に設置された主AV装置を制御しつつ映像や音声を安定視聴できて、例えば副AV装置の設置場所が浴室の場合には、快適な入浴が可能になる等の効果を奏する。

【図面の簡単な説明】

【図1】本発明に係わるAV機器制御装置の一実施例を示す概略構成図

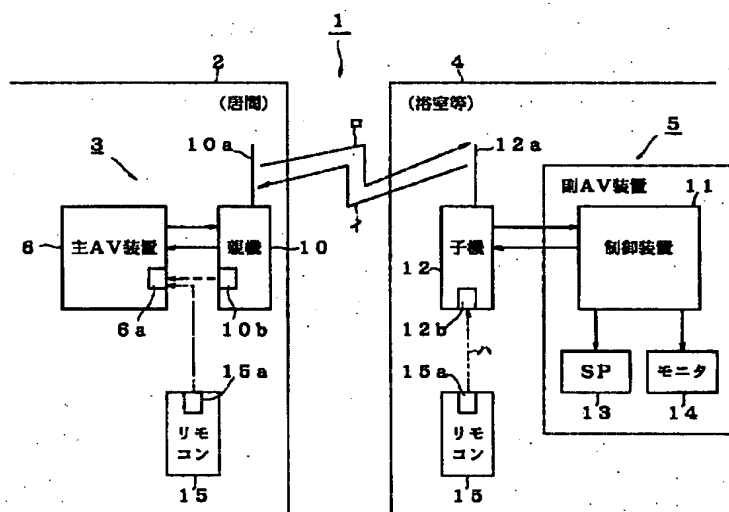
【図2】同その設置状態の一例を示す状態図

【図3】本発明に係わるAV機器制御装置の他の実施例を示す概略構成図

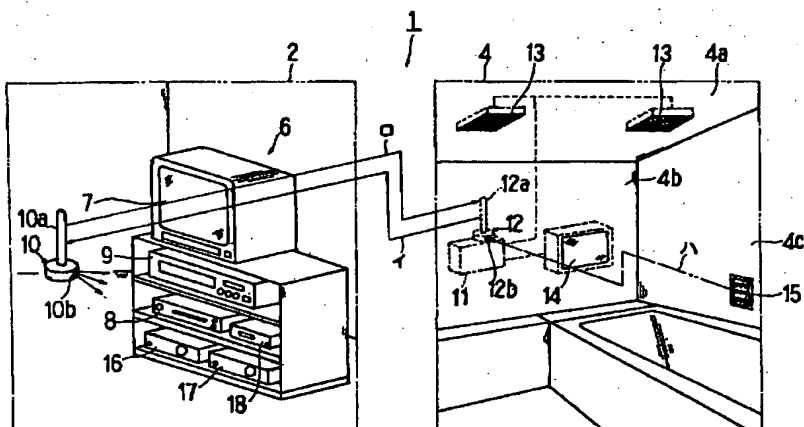
【符号の説明】

- 1 AV機器制御装置
- 2 居間
- 3 主AV装置
- 4 浴室
- 5 副AV装置
- 6 主AV装置
- 6a 赤外線受信部
- 7 テレビ
- 8 VTR
- 9 CDプレーヤ
- 10 親機
- 10a、12a アンテナ
- 10b 赤外線発信部
- 11、20 副AV装置
- 12 子機
- 12b 赤外線受信部
- 13 スピーカ
- 14 モニタ
- 15 リモコン
- 15a 赤外線発信部
- 19 脱衣所

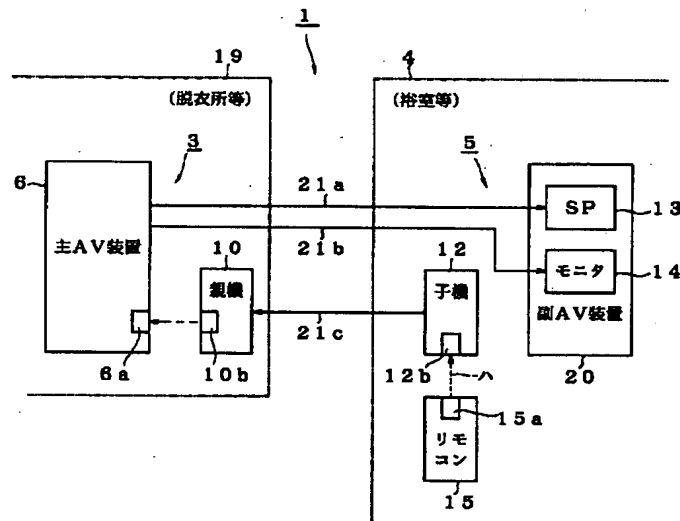
【図1】



【図2】



【図3】



【手続補正書】

【提出日】平成11年5月11日(1999. 5. 11)

【手続補正1】

【補正対象書類名】明細書

【補正対象項目名】請求項5

【補正方法】変更

【補正内容】

【請求項5】前記副AV機器用の赤外線コントローラもしくは主AV機器制御装置が、防水機能と学習機能を有するリモコンで操作され得る如く構成したことを特徴とする請求項2または3記載のAV機器制御装置。

【手続補正2】

【補正対象書類名】明細書

【補正対象項目名】0009

【補正方法】変更

【補正内容】

【0009】また、請求項3記載の発明は、副AV機器が、その副AV機器制御装置によって赤外線コントローラから発信される赤外線を受信して電気信号に変換し主AV機器に送信すると共に、主AV機器が、その主AV機器制御装置によって副AV機器から送信された電気信号を赤外線信号に変換して主AV機器をコントロールすることを特徴とする。また、請求項4記載の発明は、副AV機器の副AV機器制御装置に操作スイッチを設け、該操作スイッチによる操作信号を有線で主AV機器の主AV機器制御装置に送信し、主AV機器制御装置は副AV機器制御装置から送信された制御用信号を赤外線信号に変換して主AV機器をコントロールすることを特徴とする。また、請求項5記載の発明は、副AV機器用の赤外線コントローラもしくは主AV機器制御装置が、防水機能と学習機能を有するリモコンで操作され得る如く構成したことを特徴とする。